

SECTION 4

Habitat, Threats, and Conservation Actions

This section includes background information on how the following required elements were addressed and developed in North Dakota's CWCS:

Element 2: This element requires descriptions of locations and relative condition of key habitats and community types essential to species of conservation priority.

Element 3: This element requires descriptions of problems that may adversely affect species of conservation priority or their habitats, and priority research and survey efforts needed to identify factors that may assist in restoration and improved conservation of those species and habitats.

Element 4: This element requires descriptions of conservation actions necessary to conserve the species of conservation priority, and habitats and priorities for implementing such actions.

4.1 Overview of Habitat and Community Types

Most of North Dakota's natural habitat was predominantly prairie. Prior to settlement in the late 1800s, North Dakota was described as "great uninterrupted expanses of nearly treeless prairie...the only extensive tracts of forest were restricted to floodplains and east- or north-facing bluffs along rivers and large creeks to certain prominent hills or escarpments...and hundreds of thousands of shallow ponds and lakes in the glaciated regions" (Stewart, 1976). This wetland resource was thought to exceed 4 million acres.

In the last 150 years, the landscape has changed dramatically. Although tracts of native prairie still exist in many areas, they are traversed by a road nearly every mile (see Appendix D for this and other map examples of other conservation challenges in North Dakota). It's estimated that 50 percent of the prairie and wetlands have been plowed or drained. Numerous tree shelterbelts were planted to help reduce erosion and protect farmsteads (see Figure 4). Several large reservoirs were constructed including Lake Sakakawea which altered the natural flooding cycle of the Missouri River, North Dakota's largest riparian system. The landscape described by many early explorers and pioneers has changed considerably. North Dakota is not the vast expanse of treeless prairie it once was. There is, however, great potential to protect, conserve, and enhance what remains and what was lost. Figure 5 provides a breakdown of the major land classes present in North Dakota today.

4.1.a Habitat or Community Types Considered

North Dakota is a dynamic ecosystem. Due to varying temperature and rainfall, one portion of the state can be experiencing drought while at the same time another could be enduring a flood. The changes can also be quite drastic from one year to the next. A good example of this is the wet/dry cycles of the wetland/prairie landscape. Prairie potholes can be overflowing one year and dry the next. This natural cycle of boom and bust can dramatically affect individual species presence/absence, range, distribution and relative abundance in a given area over time. Such change and



These two photos depict typical scenes of pre- and post-settlement. The top photo shows one square mile of native prairie with naturally occurring wetlands in blue while the bottom photo shows one square mile of agricultural land with several straight-line tree shelterbelts. Both aerial photographs from Grand Forks County.

variability can make identifying specific locations of key habitat somewhat difficult, particularly when population survey data is lacking. As a result, North Dakota's CWCS will emphasize identifying important habitats and landscapes within geographic areas, rather than specific site locations. Using this approach, species of conservation priority were combined into habitat guilds when describing essential habitats within a geographic area.

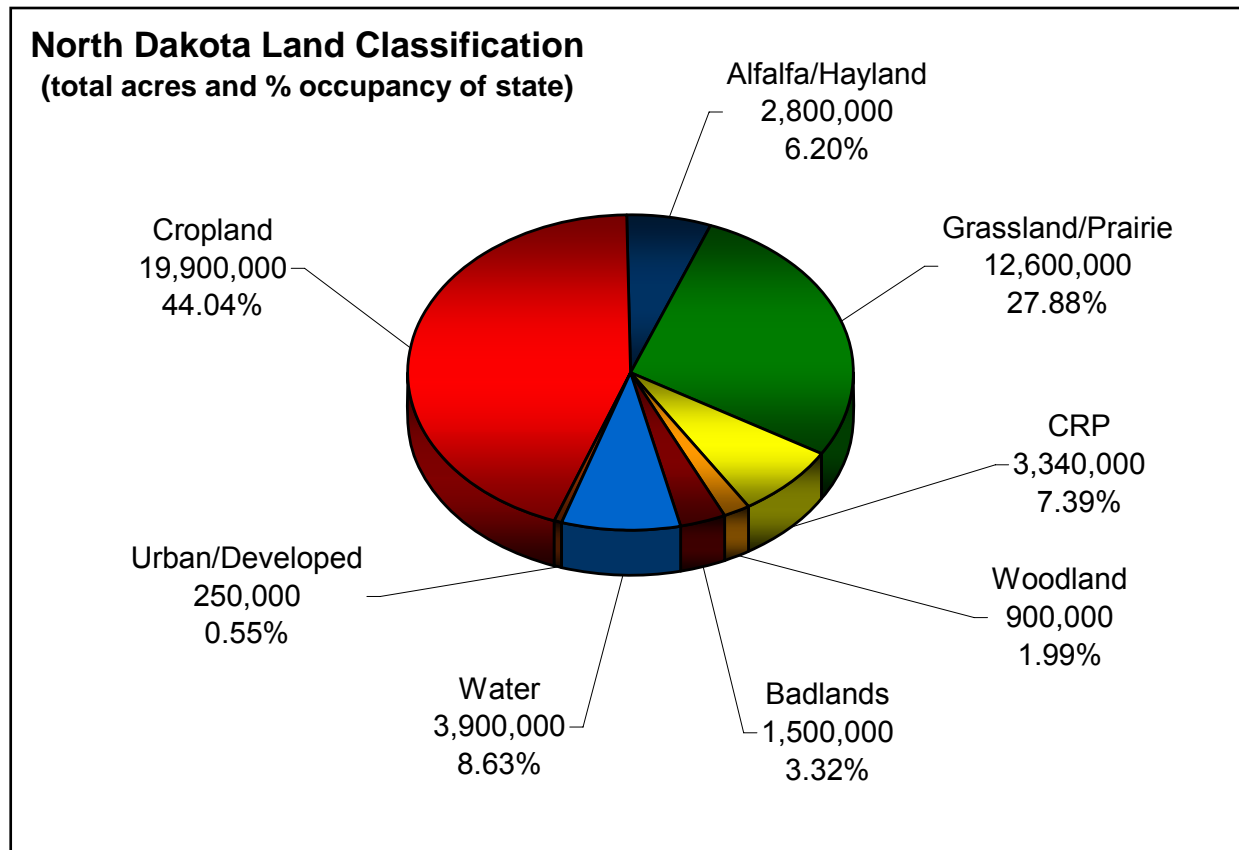


Figure 5. Total acres and percent occupancy of the major land classes in North Dakota.

Sources: North Dakota GAP Analysis, National Wetlands Inventory, National Agricultural Statistics Service, Farm Service Agency

4.2 Identifying Key Habitats and Community Types

North Dakota is a fairly large state and complete ecological assessments have not been conducted for the majority of the state. Therefore, the relative condition of these habitat types is generally lacking and can be described only in broad terms. A landscape approach in conservation planning has numerous advantages. For example, it allows us to:

- Link a species of conservation priority to a key landscape/habitat, sometimes within a specific geographic area, or in some instances, multiple landscape components.
- Provide a listing of all other fish and wildlife using the landscape component (i.e. comprehensive).
- Provide relative condition applicable to that landscape component.
- Identify priority conservation problems in a landscape component.
- Identify corresponding conservation actions needed in the landscape component, and identify potential partners that are, or could be currently addressing them.
- Provide an objective for accomplishing a conservation goal within a landscape component.
- Identify research or survey efforts needed within a landscape to obtain information necessary to verify conservation problems and conservation actions needed.

- Provide information regarding ideal habitat/landscape characteristics in a given area, so as to provide a landscape goal to work toward.
- Provide information regarding management effects on species in a given area, as management practices can have varying effects geographically.

4.2.a Resources Used for Delineating Landscape Components

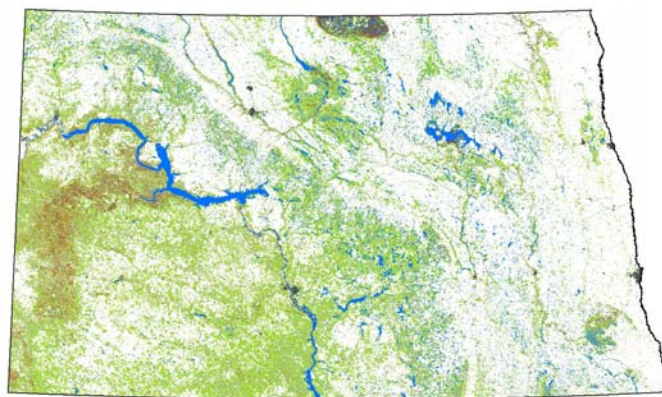
This section describes the information sources used for identifying key habitats and community types for North Dakota's CWCS. For this purpose, these areas are defined as landscape components, since these are the principal habitats or community types in North Dakota. Three primary tools were used to identify landscape components: land cover information, existing spatial frameworks (i.e. ecoregions) and statistical models built from biological data.

4.2.a.i Landcover

Several landcover classifications are available for North Dakota. The primary classifications used include:

- ND GAP Analysis Statewide Landcover. Imagery used is dated from 1992-1998. There are 39 land classifications, focused primarily on non-cropland. The ground resolution is 30x30 meters.
- NASS (National Agricultural Statistics Service) statewide Landcover for 2003. The dates for imagery range from August 9-14, 2003. There are 27 land classifications, focused primarily on cropland types. The ground resolution is 30x30 meters.
- USFWS Landcover Classification for that portion of the state east of the Missouri River only. Imagery used dates from 1991-1995. There are 15 land classifications. The ground resolution is 30x30 meters.

By combining portions of the GAP and NASS landcovers, a more accurate vegetation layer for the entire state was produced. The NASS layer provides the most recent picture of cropland status while the GAP layer provides the best information on non-cropped areas. Landcover classes were merged based on similarity of cover type (e.g. the multiple prairie cover types were merged and reduced to two primary types: prairie/grassland, and planted or artificial prairie/grassland). By overlaying the NASS cropland cover classes on the GAP layer, a depiction of available vegetation was produced. A total of nine cover types were selected to represent the CWCS Landcover. These include cropland, planted or artificial grassland, prairie/grassland, shrubland, woodland, badlands, barren/sparse land, water, and developed. Although this does not provide insight as to the condition of the vegetation, it essentially provides a vision of what is cropland and what is not.



CWCS Landcover.

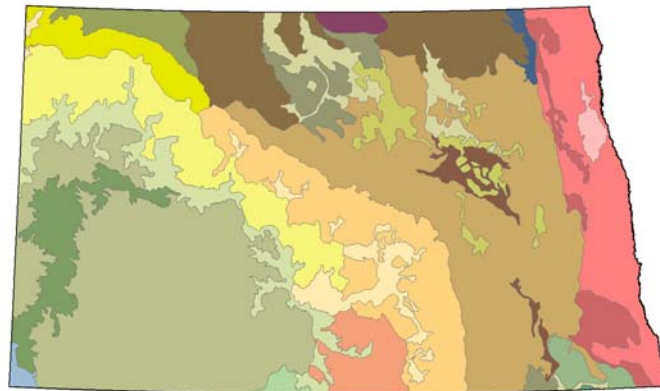
4.2.a.ii Ecoregions

There are two primary large scale geographic classification schemes that are commonly used for North America (i.e. Bailey et al. 1994 and Omernick 1987). Although different, they basically divide North Dakota into three or four large spatial areas or ecoregions. Ecoregions are determined based on general similarity of geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology. Because there



Level III Ecoregions.

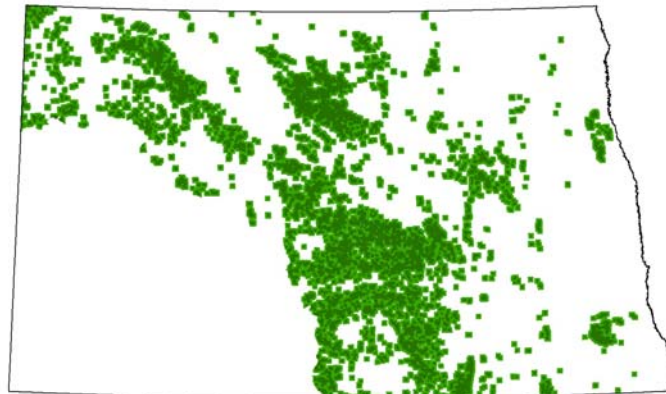
are differences between classification schemes, the EPA undertook a collaborative effort to develop a common framework of ecological regions for North Dakota in the mid 1990s. Using this approach North Dakota was divided into four level III ecoregions: the Lake Agassiz Plain, the Northern Glaciated Plains, the Northwestern Glaciated Plains, and the Northwestern Great Plains. These ecoregions are also commonly referred to as the Red River Valley, Drift Prairie, Missouri Coteau, and Missouri Slope (see figure xx). Level III ecoregions were further delineated into finer level IV ecoregions by the EPA and are useful for state-level planning activities. These designations and the more detailed level IV ecoregions formed the framework for delineating geographic areas of similar habitat.



Level IV Ecoregions.

4.2.a.iii Planning Models

Planning models use the best available science to produce tools for conservation planning. They allow for smaller or more precise geographic conservation planning, which is especially important in North Dakota's dynamic landscape. The USFWS Habitat and Population Evaluation Team has developed several models useful in predicting areas of bird conservation priority for grassland/wetland species in the Prairie Pothole Region of North Dakota. The Grassland Bird Conservation Areas (GBCA) model was designed for a suite of grassland nesting birds that depend on large areas of grassland with minimal edge and a set distance from trees. The GBCAs were used to help delineate large expanses of grassland important to SoCP. Other models depicting species presence/absence based on BBS information for some grassland/wetland associated species have been developed and will be used wherever possible.



GBCA model.

4.3 Process for Developing the CWCS Landscape Components and Focus Areas

North Dakota is predominately a grassland state with a variety of grassland types. Where these changes in grassland communities occur is an important factor in identifying different landscapes. The EPA's level III ecoregions provides a good framework for identifying the boundaries of different grassland landscapes in North Dakota. These grassland types are Tallgrass Prairie (Red River Valley), Eastern Mixed-grass Prairie (Drift Prairie), Mixed-grass Prairie (Missouri Coteau), and Western Mixed-grass/shortgrass Prairie (Missouri Slope). Each of these is considered as a separate landscape component. In addition to native grassland communities, there are several other major landscape components in North Dakota. They include planted or tame grassland, wetlands/lakes, rivers/streams/riparian, badlands and upland deciduous forest. These landscape components are embedded within the various grassland communities. They are typically rather large geographic areas that have fairly specific vegetative communities, topography, land uses, etc. Using this approach, nine landscape components were identified. (see Appendix B for individual landscape component maps).

In some cases there was sufficient information or reason to identify focus areas within a particular landscape component. These were developed using a GIS (i.e. ArcMap) that overlaid the Level IV ecoregions on the land cover layer that was developed for the CWCS. Some of the Level IV ecoregions boundaries were modified based on vegetation information provided by the CWCS landcover. The statistical models aided in further refining focus area boundaries. Focus areas typically exhibited unique or easily identifiable differences in vegetation, soils, topography, hydrology or land use. Focus areas are highly variable in size and often represent an area of native vegetation or a natural community type rare to North Dakota. A total of 21 focus areas were identified. (see Appendix C for focus area maps).

It is important to recognize that species often require a combination of habitat types or landscape components for survival. The key to ensuring their long-term survival is to maintain a diverse landscape including a mosaic of grasslands, wetlands, woodlands, rivers, streams, and cropland. This cannot be reduced to a few specific small sites, but requires instead a much broader landscape scale or view. It should also be noted that although cropland constitutes a large portion of North Dakota, it was not historically a habitat component of the Northern Great Plains. Consequently, many species do not depend solely upon cropland for their survival, so it is not identified as a key habitat type or landscape component. However, agricultural production is a major part of North Dakota's past, present, and future and it can provide benefits such as nesting cover, migration stopover, and winter food sources if managed properly.

4.3.a References

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- USDA - National Agricultural Statistics Service's 1:100,000-Scale 2003 Cropland Data Layer. A Crop-Specific Digital Data Layer for North Dakota, 2004 March 14. <http://www.nass.usda.gov/research/Cropland/SARS1a.htm>
- USFWS Detailed Landcover of the ND Portion of the Prairie Pothole Region. 1996.
- USFWS – Habitat and Population Evaluation Team. Grassland Bird Conservation Areas (GBCA).
- USFWS National Wetlands Inventory. <http://www.nwi.fws.gov/index.html>

4.4 The Process for Identifying Threats and Conservation Actions

Beginning in 2002, NDGFD staff met with numerous agencies and organizations to discuss various aspects of the CWCS. These meetings generated some general information with respect to threats and conservation actions but in depth information was lacking. In an attempt to gain additional insight The NDGFD held scoping meetings with individuals having knowledge and expertise on specific taxa. A total of three scoping meetings were held: one addressing fish, one addressing birds, and a joint meeting addressing mammals and herptiles. Information identified through these meetings was recorded and added to a matrix of threats and conservation actions. At several of the meetings the group discussed the idea of forming a work group that would meet periodically to discuss ideas, ongoing research, information needs, etc. Many of the participants agreed that this was a good idea and one worth continuing.

For the most part, major problems affecting species and associated conservation actions were identified in general terms (i.e. loss of habitat due to agricultural conversion, protect habitat with grassland easements). More specific information was often lacking. For example, although a substantial portion of sagebrush habitat in North Dakota has been converted to cropland or has been severely degraded by grazing or other land uses, a fair amount of habitat remains intact. Sage grouse numbers, however, continue to decline. Potential reasons include continued habitat conversion, industrial development, grazing, noxious weeds, invasive plants, predation, disease and climatic conditions. While conservation issues and actions have been identified for all of these potential problems, the exact cause of the sage grouse decline, as well as the conservation actions needed to reverse the decline, are not certain (see Appendix E for examples of the effects of various management practices on birds and ideal breeding/habitat conditions).

Numerous agencies or organizations have implemented conservation actions in North Dakota, particularly with respect to waterfowl and grassland nesting birds. The Prairie Pothole Joint Venture has secured thousands of acres of grassland and wetland easements. The Northern Great Plains Joint Venture has similar plans for the southwestern portion of the state. Ducks Unlimited, Delta Waterfowl, Pheasants Forever, The Nature Conservancy, and North Dakota Natural Resource Trust are examples of non-governmental organizations that currently commit substantial resources for habitat conservation. The Natural Resources Conservation Service also has numerous conservation programs for willing landowners as well as the USFWS and the NDGFD. NDGFD staff met with all of these groups and most have expressed a willingness to consider SoCP needs in future efforts and possibly partner on habitat projects of mutual benefit.

4.4.a Research Needs for Developing Conservation Actions

There is a clear need to collect baseline presence, absence and distribution data for many SoCP. There is also a major need to conduct research or collect information on threats and conservation actions affecting many of these species. It is essential to strike a balance between initiating studies or research to improve understanding of the threats and/or conservation actions with those studies intended to provide a better understanding of the population status for SoCP. Some of the threats and conservation actions are fairly well researched and documented (e.g. loss of native prairie and wetlands to cropland) while others have only been discussed or identified in a generic or anecdotal sense (e.g. pesticides, herbicides, road kills, disease, etc.). In those instances where little or nothing is known about the population status of a particular species, there is an overriding need to obtain this information prior to initiating action on generic or perceived threats. As varying climatic conditions and habitat in North Dakota can mean substantial changes in many populations, it would be imprudent to begin studies or research on unsubstantiated threats or conservation actions without first knowing something about the population status or natural variability of a particular species or group of species. When the population status of a species is not in question, and conservation actions and/or threats are well defined, documented and understood, the intention will be to initiate conservation actions that improve habitat conditions or reduce the impacts of threats. For SoCP that have good population trend data but whose threats and conservation actions are not well understood, research is needed to identify relevant threats and the appropriate conservation measures which might be conducted.

4.4.b Relative Priority of Research Needs for SoCP

The North Dakota CWCS identifies many research needs, survey efforts and necessary conservation actions (see also species accounts in Appendix A). Since funds for all of these actions are not available, priority was given to those species in the greatest need of conservation in order to stretch SWG dollars as far as possible. As it states in section 3.3, Level I SoCP are those that are in decline and have little or no monetary support. These species will be given priority for SWG funding when opportunities for survey or monitoring efforts and conservation actions occur. However, this will not preclude the NDGF from using SWG funding on Level II and Level III species when project opportunities and partners arise. This will ensure that all species in North Dakota will benefit from the CWCS and SWG funding.

4.5 Conservation Issues or Limits in North Dakota

North Dakota is an agricultural state. It ranks number one in production of barley and sunflowers in the United States. The state ranks number two for wheat production, and interestingly, number four for bee and honey production. There are approximately 30,000 active farms averaging nearly 1,300 acres in size. At one time, in 1935, the state had nearly 85,000 individual farms. While the number of farms has declined, the average farm size is increasing (see figures 6 and 7). Cattle production ranks number 16 in the nation with nearly 1.9 million cattle raised in the state. The number of cattle operations has also declined, with a peak of 35,000 operations in 1965 and about 12,000 in 2002 (see figure 8). There are few operations with large numbers (500+ head) of cattle (see figure 9).



Figure 6. Number of farms in North Dakota.

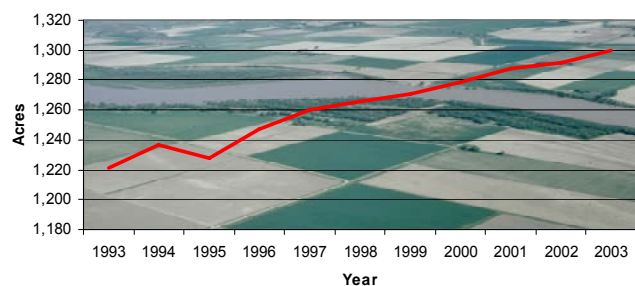


Figure 7. Average farm size in North Dakota.

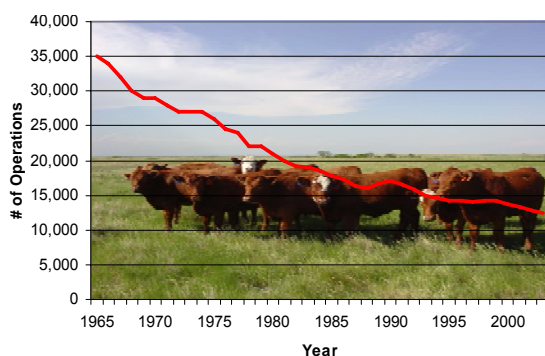


Figure 8. Number of cattle operations in North Dakota.

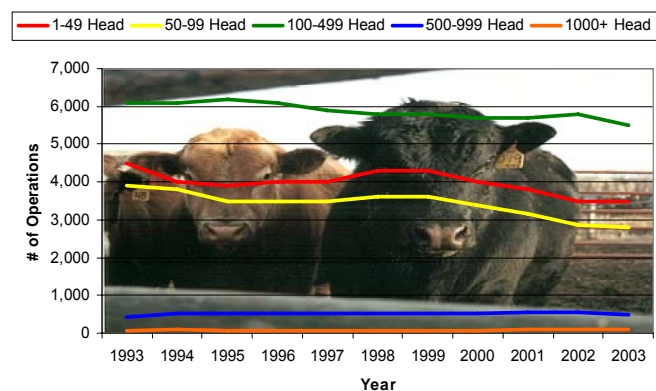


Figure 9. Number of cattle per operation in North Dakota.

4.5.a Private Land

Nearly 89 percent of North Dakota is held in private ownership. Given that fact, there is a considerable opportunity to work with private landowners to conserve fish and wildlife resources. Cropland, rangeland, hayland, and various other components (i.e. wetlands, wooded areas, grassed waterways) that make up a farm or ranch provide much of the state's habitat. Therefore, the quantity and quality of these components will influence how successful the CWCS is in conserving fish and wildlife species in North Dakota. Although some land could be enhanced for wildlife, adequate wildlife habitat does exist due to good stewardship practices across the state. These landowners should be commended for their voluntary efforts to preserve a variety of fish and wildlife resources on their land. In addition, many landowners in the state have entered into conservation practices with the NRCS, USFWS, NDGFD and others. Besides farmers and ranchers, an increasing number of hunters and other recreationists have been purchasing land.

Since so much of the state is privately owned, it is worth noting some private land regulations, particularly in relation to conservation of wildlife and fish resources. Some laws were intended to protect private property rights and others to prohibit establishment of corporate farming. However, in other cases, conservation-minded landowners may be prevented by law from taking advantage of programs to protect natural areas on their property.

4.5.a.i Easements

A conservation easement is a legal agreement between a willing property owner and an interested conservation organization. It contains language to restrict surface use or development of the land in order to protect its conservation values. For example, a grassland easement between a landowner and the USFWS or DU will prevent the grassland from being cultivated or otherwise changed from its indigenous condition. The land may still be utilized for livestock production and other non-destructive uses. The sale of a grassland easement may provide the landowner a payment of nearly one-quarter the value of the land. The land remains in private ownership and all property rights remain other than the current or future landowners may not take a plow to the land, keeping the "green side up." Conservation easements are an effective tool for permanent conservation of endemic grassland birds and a variety of other grassland-dependent wildlife in North Dakota, and are designed to protect the conservation value of existing habitat.

Conservation easements can and do provide a win-win situation. Voluntary, incentive based programs like conservation easements have been well received by landowners and agriculture producers of the state and are endorsed wholeheartedly by farm groups. Easements of 30 years or fewer implement conservation actions, yet give the operator the opportunity to decide which management strategies to employ in the future.

In every other state except North Dakota, landowners have the right to donate or sell perpetual conservation easements. However, according to N.D.C.C § 47-05-02.1, a North Dakota landowner may not consent to an easement from the state that exceeds 99 years. In order to prevent grassland birds such as the Baird's sparrow and Sprague's pipit from becoming endangered indefinitely, native prairie habitat must remain intact. The law preventing perpetual easements from being sold or donated in North Dakota could be a major impediment.

4.5.a.ii The Right to Purchase and Sell

The ability to own land in the United States is a gift. The right to sell land to willing buyers is just as valued. In many states, nonprofit organizations through fee title purchase are the leading conservers of natural areas.

Nonprofit organizations may purchase land but it is not an easy process in North Dakota. According to N.D.C.C § 10-06.1-10, "before farmland or ranchland may be purchased by a nonprofit organization for the purpose of conserving natural areas and habitats for biota, the governor must approve the proposed acquisition." In addition, before such a purchase takes place, a proposed acquisition plan must be submitted to the agriculture commissioner who then convenes an advisory committee to review the

proposed acquisition. The advisory committee consists of the director of the state Parks and Recreation Department, the Agricultural commissioner, the state forester, the director of the state Game and Fish Department, the president of the North Dakota Farmers Union, the president of the North Dakota Farm Bureau, the president of the North Dakota Stockmen's Association, and the chairman of the county commission of any county in which the land is to be acquired. The advisory committee holds a public hearing with the board of county commissioners and makes a recommendation to the governor if the land can be sold. The governor then makes the ultimate decision if the land may be acquired by the nonprofit organization. The nonprofit organization will be required to make payments in lieu of property taxes on the property, calculated in the same manner as if the property was subject to full assessment and levy of property taxes. This process is often unappealing to nonprofit conservation groups and is disappointing to landowners who wish to sell their land for conservation purposes.

4.5.b Public Land

A small percentage of North Dakota is held in public ownership. Of the 45 million acres of land in the state, less than 3 million are owned in fee title by state and federal land management agencies. Most of these agencies work in cooperation with private producers in managing these lands. For example, the NDGFD leases certain tracts of wildlife management areas for grazing, haying, and food plots. The USFS manages for multiple uses and the sustained yield of renewable resources such as water, forage, wildlife, and recreation, as well as industry such as oil and gas development. There is some relief in knowing that most of the public land is safe from conversion to cropland. Also, much public land, such as state school land, is still native vegetation. The potential exists to work cooperatively with other state and federal land holders to alter management practices to benefit SoCP and demonstrate the effectiveness of conservation tools to enhance wildlife habitat and populations.

Land acquisition is not a high priority conservation action for preserving SoCP. This is partly because the purchase of land in fee-title by the NDGFD is not a simple process. According to N.D.C.C § 20.1-02-05.1, every land acquisition exceeding 10 acres or \$10,000 must be approved by the budget section of the legislative council. The governor must also approve the acquisition. If a federal agency such as the USFWS were to purchase land, the board of county commissioners of the affected county shall inspect the proposed acquisition area, give public notice of the acquisition, and then approve or disprove the acquisition (see N.D.C.C § 20.1-02-17.1). Because of these complexities, fee title acquisition of private land by public agencies is not a conservation tool that can be used with much frequency. There are, however, select opportunities where this option can be pursued. One example is in instances where unique habitats or natural areas are being threatened and the landowner is willing to sell. See N.D.C.C § 20.1-02-16.2 and N.D.C.C § 55-11-01 for further information on acquiring natural areas for the common benefit of the people of present and future generations.

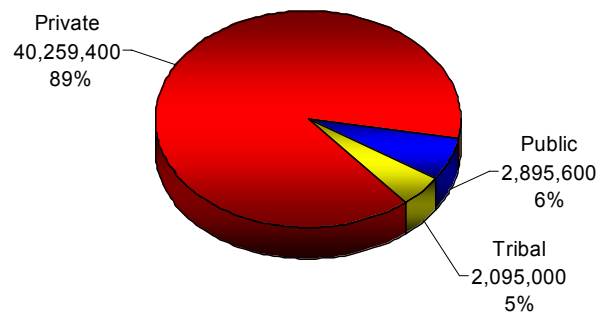


Figure 10. Land ownership in North Dakota. Total acres and % occupancy of the state.

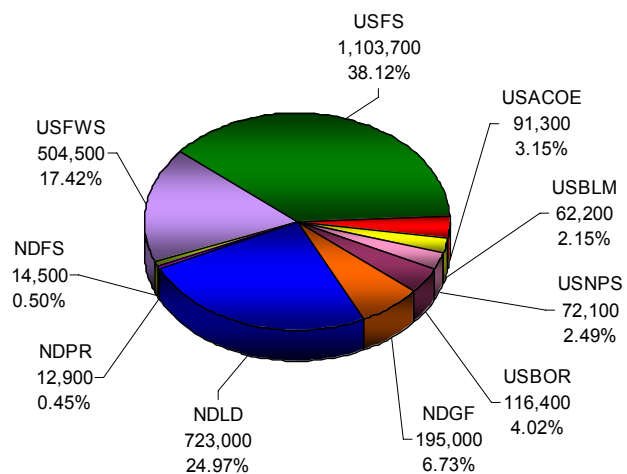


Figure 11. Public land ownership breakdown in North Dakota. Total acres and % of total public land.